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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/764,467	01/17/2001	Gregg J. Arnezzani	END919980055US3	8919

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John Jordan
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EXAMINER

VIGUSHIN, JOHN B

ART UNIT

PAPER NUMBER

2827

DATE MAILED: 03/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/764,467

Applicant(s)

ARMEZZANI ET AL.

Examiner

John B. Vigushin

Art Unit

2827

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 December 2002 and 06 January 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 26-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 26 is/are rejected.
- 7) ☒ Claim(s) 27-31 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2. 6) ☐ Other: _____

DETAILED ACTION

1. The present Office Action is responsive to Applicant's amended response filed December 09, 2002 and January 06, 2003. The Examiner acknowledges the amendments to the Specification and Claims 26 and 28. Claims 26-31 remain pending in the instant amended Application.

Rejections Based On Prior Art

2. The following reference was relied upon for the rejections hereinbelow:

Anthony (US 4,394,712)*

*Already of record in the instant Application.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claim 26 is rejected under 35 U.S.C. 102(b) as being anticipated by Anthony.

Anthony discloses, in Fig. 8: a first circuitized substrate (lower substrate 11) having at least one conductive aperture 20 (Fig. 5) therein having an external surface 33 (col.5: 22-31; Figs. 2 and 8); a second circuitized substrate (upper substrate 11) having at least one conductive aperture 20 (Fig. 5) therein having an external surface 32, the first and second circuitized substrates 11 aligned such that the at least one

conductive aperture 20 of the first circuitized (lower) substrate 11 is substantially aligned with the at least one conductive aperture 20 of the second circuitized (upper) substrate 11, the at least one conductive aperture 20 of the first circuitized (lower) substrate 11 and the at least one conductive aperture 20 of the second circuitized (upper) substrate 11 including a conductive metallic (i.e., copper) layer 23 (col. 4: 59-68; col. 5: 43-46); at least one solder member (the core portion of conducting path 29 as indicated in col. 6: 12-24 and 28-39; hereinafter, the "solder member" will be referenced by the conducting path element number "29") including a first contact portion 25 extending from the external surface 33 of the conductive aperture 20 of first circuitized (lower) substrate 11, the first contact portion 25 (Fig. 6) including a cross-sectional configuration that is substantially round (col. 6: 36-39), and a second contact portion 25 of solder member 29 extending substantially within both of the aligned conductive apertures 20 of first and second circuitized substrates 11 to at least the external surface 32 of the conductive aperture 20 of second circuitized (upper) substrate 11 to secure the circuitized substrates together (Figs. 6 and 8; col. 5: 22-31; note in Fig. 8 that the first and second contact portions 25 of solder member 29 wet the copper external surface 33 around the first aperture 20 of lower first circuitized substrate 11, and wet the copper external surface 32 around the second aperture 20 of upper second circuitized substrate 11).

Allowable Subject Matter

5. Claims 27-31 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. The following is a statement of reasons for the indication of allowable subject matter:

The patentability of each of Claims 27, 28, 29-30 and 31 is clearly stated in the single limitation of each of Claims 27, 28, 29 and 31, respectively, in combination with the limitations of base Claim 26.

7. As allowable subject matter has been indicated, applicant's reply must either comply with all formal requirements or specifically traverse each requirement not complied with. See 37 CFR 1.111(b) and MPEP § 707.07(a).

Response to Arguments

8. Applicant's arguments with respect to Claims 26-31 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a) Burgess et al. (US 4,803,450) discloses stacked silicon circuit boards (Figs. 2 and 3) joined by conductive patterns 12 formed of high temperature solder (col.5: 30-

32). Burgess et al. is silent as to the material of the conductive paste that fills conductive vias 14 (col.5: 24-26).

b) Burger et al. (US 4,788,766) discloses stacked PTFE boards joined by bonding material 24 which may be low-temperature (i.e., eutectic or near-eutectic solder) that plates the metal surfaces of the vias and the metallization around the vias (col.4: 53-56 and 60-63; col.7: 6-16).

c) Chang et al. (US 5,132,879) discloses joining circuit boards 10 and 12 by reflowed solder material 34 and 36 forming solder connection 32 in the aligned vias (Fig. 3; col.4: 53-62). Chang et al. is silent as to the composition and melting point of the solder material.

d) Jiang et al. (US 6,163,957) discloses joining metallized substrates by means of eutectic tin-lead solder (melting point = 183° C) or, alternatively, solders having higher melting points (col.6: 49-col.7: 32).

e) Duffy et al. (US 5,876,842) discloses a circuit board assembly (Fig. 4) electrically interconnecting plural cores (as shown in Fig. 2B) by means of any type of solder depending on the chip attachment thereto; e.g., near-eutectic tin-lead solder in conjunction with C4 chip attachment (col.9: 55-64).

f) Caporizzo (US 6,013,876) discloses a circuitized substrate 101 having a solder member 105 with contact portions extending to both surfaces 106 and 107 of circuitized substrate 101 for establishing connection between circuitry 102 on the surfaces 106 and 107 of circuitized substrate 101 (Figs. 2 and 3; col.3: 15-22 and 32-40).

g) Andros et al. (US 5,633,533; already made of record in Applicant's IDS filed January 17, 2001) discloses connecting a circuitized substrate 15 to a printed circuit board 27 by means of high temperature (10:90 tin:lead) or eutectic temperature (37:63 tin:lead) solder reflowed in the plated through holes (col.3: 41-62).

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John B. Vigushin whose telephone number is 703-308-1205. The examiner can normally be reached on 8:30AM-5:00PM Mo-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David L. Talbott can be reached on 703-305-9883. The fax phone numbers

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for the organization where this application or proceeding is assigned are 703-308-7382 for regular communications and 703-308-7382 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.



John B. Vigushin
Examiner
Art Unit 2827

jbv
March 17, 2003